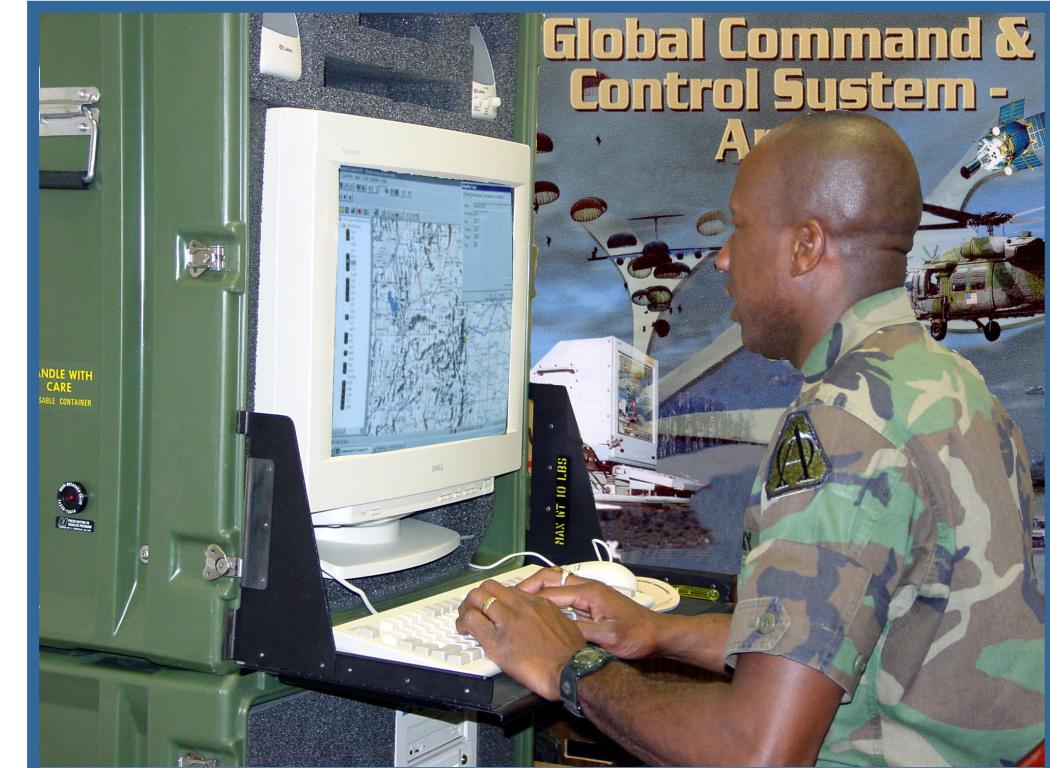




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NETWORK CENTRIC ENTERPRISE SERVICES: THE NEXT GENERATION COE



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PURPOSE

- Provide the GCCS-A Users With an Overview of the Next Generation COE, Network Centric Enterprise Services (NCES), and the DISA Migration From COE to NCES**



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AGENDA: COE AND NCES

- What's happening?
- Yesterday, Today, and Tomorrow
- How?
- Guiding Principles
- What is “NCES”?
- Multiple Views of the NCES Architecture
- NCES Schedule?



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WHAT'S HAPPENING?

- COE is transitioning to become ACAT-1 program
- COE is being transformed into the “Network Centric Enterprise Services” (NCES) Program
 - Accelerating the move to network centric architecture
 - Keeping the good concepts of COE
 - Addressing flaws of current platform-based solutions
 - Keeping pace with technology
- COE 4.x will be:
 - Supported for systems planning to field on it
 - › COE 4.x will likely be in the field for 3-4 years
 - Foundational element of NCES Version 1.X
 - › Selected components of COE 4.x will be brought forward



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C3I/CIO GOALS FOR NET-CENTRIC DOD

- Make information available on a network that people depend on and trust
- Populate the network with new, dynamic sources of information to defeat the enemy
- Deny the enemy advantages and exploit weakness



NETWORK CENTRIC ENTERPRISE SERVICES

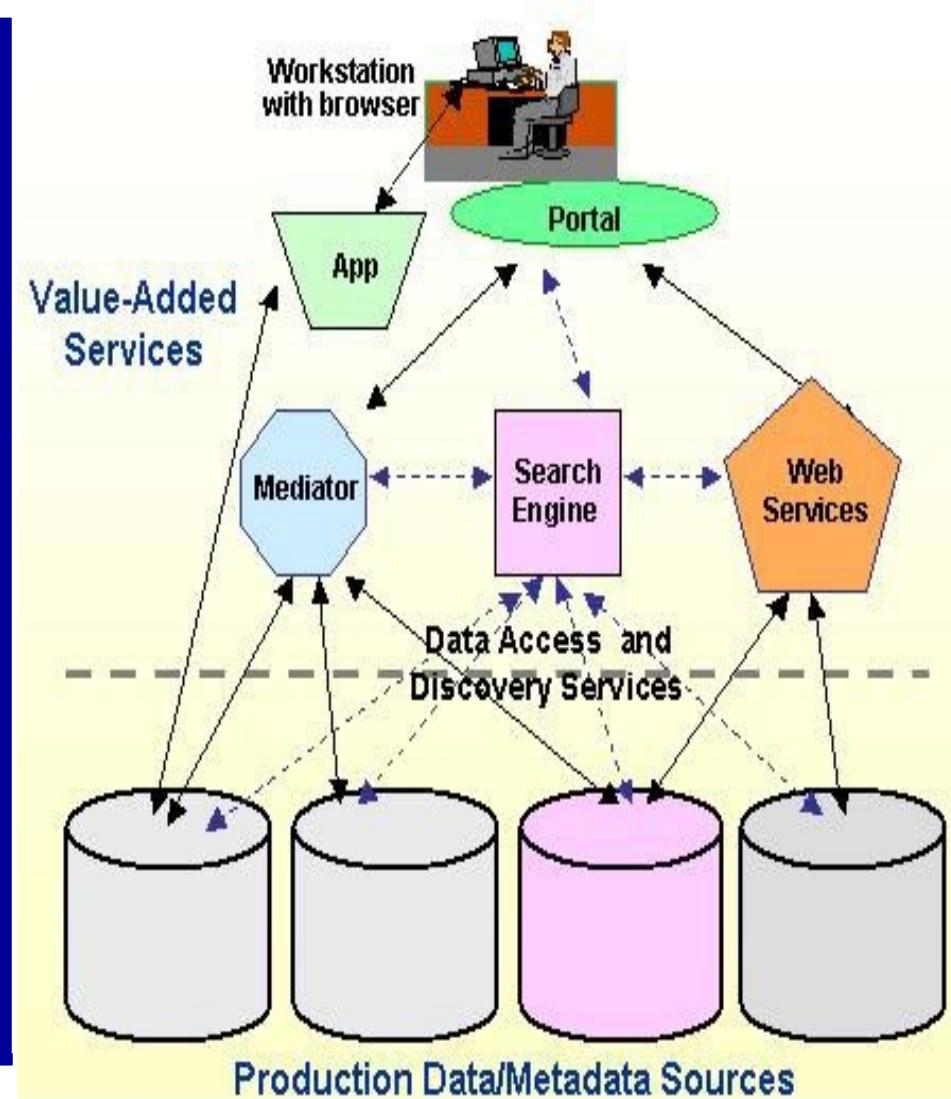
“Power to the Edge”

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- Web Services as Enabler
- Tactical User Support (e.g., Peer-to-Peer)
- Plug-and-Play Components and Capabilities
- Rapid Integration and Fielding of Capabilities
- Robust Data Exchange
- Publish and Subscribe Capabilities
- Assurance of Availability (i.e., Application QoS)
- Security Infrastructure
- Support for Joint Task Forces, FIOP, Deployable Joint C2 and other DoD Initiatives





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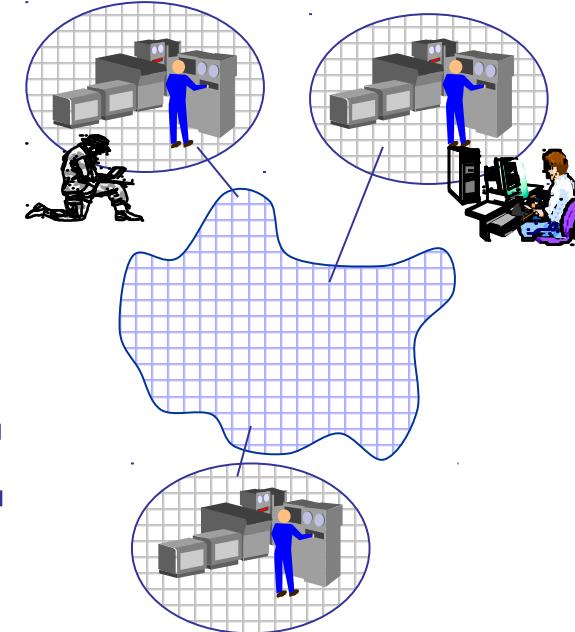
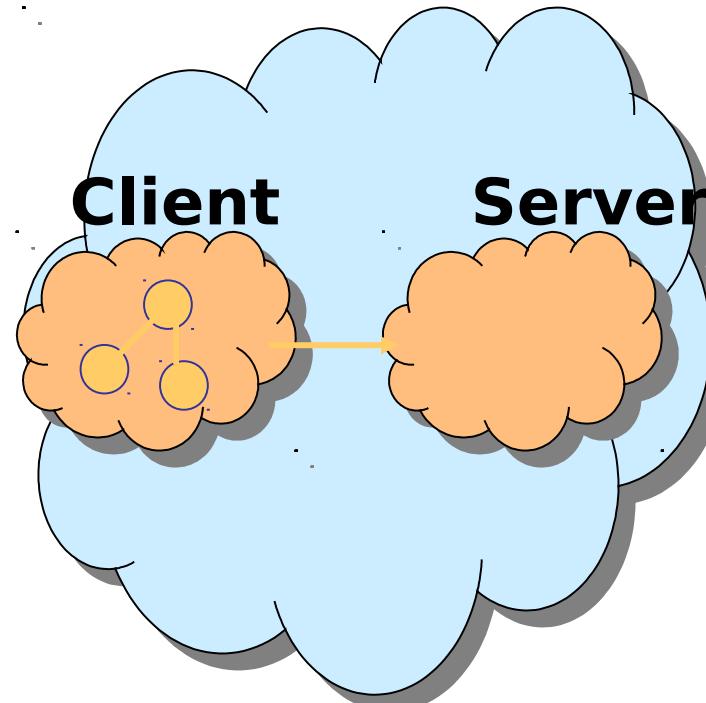
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COE YESTERDAY (OPERATIONAL TODAY)

COE 3.x

Legacy



NETWORK CONNECTIONS

- **BUT no network visibility or access services**
- **Different directories, security, access processes etc.**
- **Different data representations**
- **Numerous uncoordinated Transformations**
- **Data filtered by local system (e.g., JTAV and JOPES show different data from GTN different from GTN directive)**



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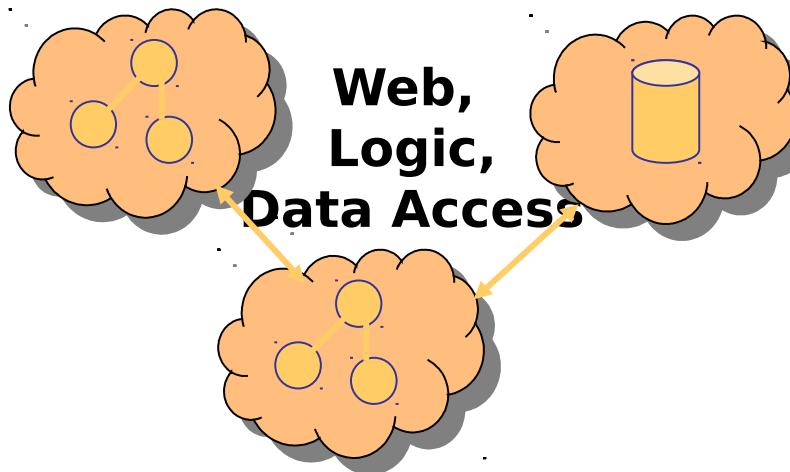
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COE PRODUCTION TODAY

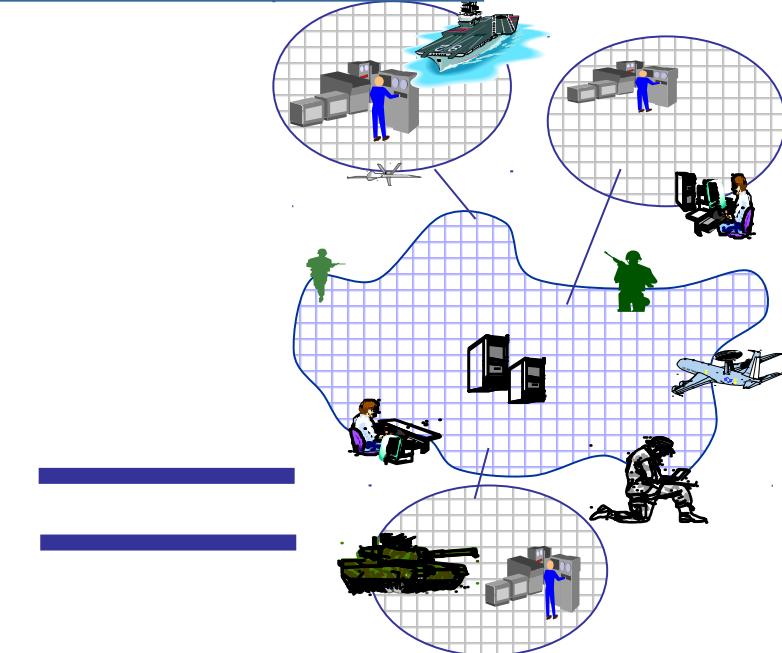
COE 4.x

Presentation



Server side components and containers
N-tiered, Web-enabled, robust Metadata Services

Data Sources



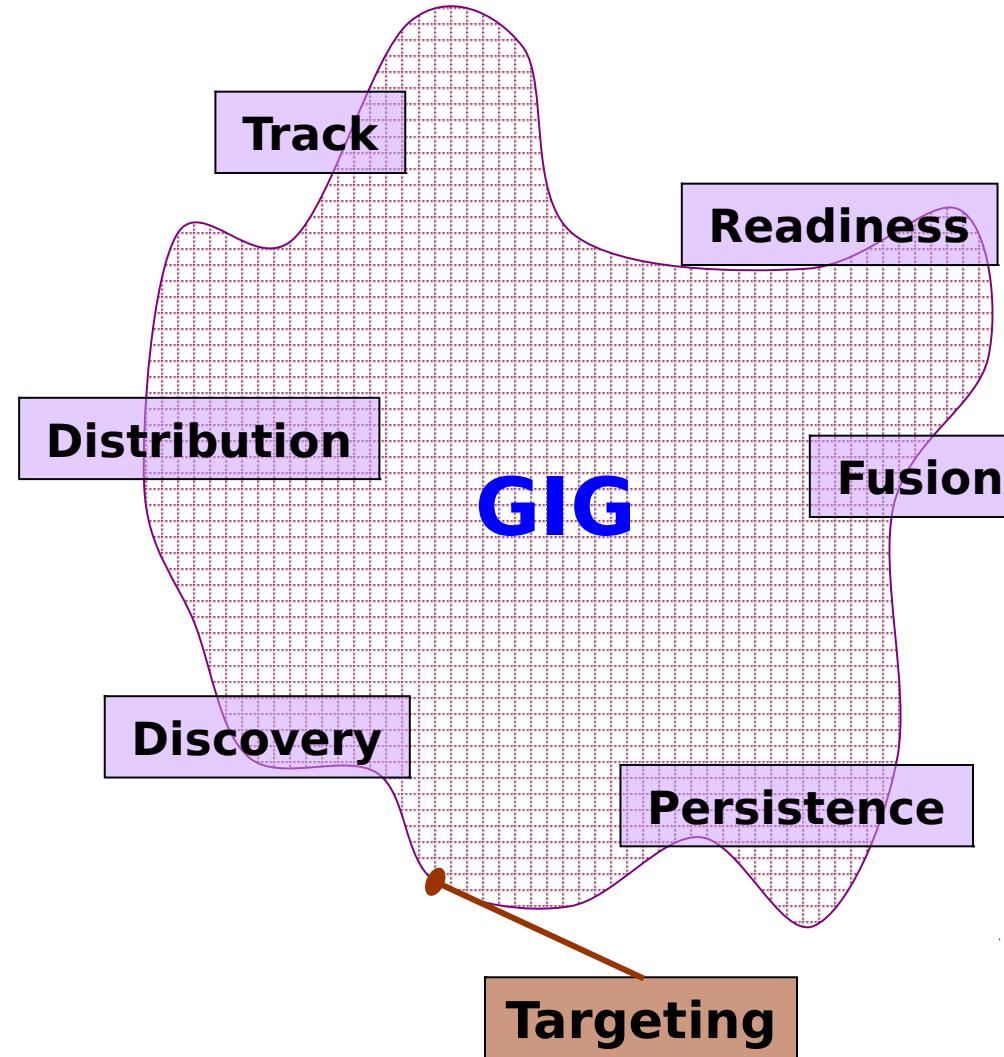
NETWORK CONNECTIONS

- Still Primarily System Focused
- Some network visibility & access to services
- Different directories, security, access processes etc.
- Different data representations
- Some coordinated Transformations
- Data filtered by local systems, some cached data available to multiple users



NCES OF TOMORROW (FORMERLY, COE 5.X)

Network Centric Enterprise Services



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HOW ?

- Refocus COE activities and apply resources to enterprise services
- Bridge legacy systems to enterprise services
- Incrementally implement NCES functionally
 - Initially scale the enterprise services to C2 and combat support communities by expanding on the capabilities of current COE foundation/systems
 - Prove publish/subscribe approach using C2/CS information publishers and subscribers
 - Establish architectural guidance for information publishers and builders of NCES
 - Provide transition path for current COE based systems to take advantage of new capabilities and to migrate from platform centric to network centric



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HOW (CONCLUDED)?

- Bring forward proven benefits of COE process
 - Continue to facilitate software integration of components from multiple sources
 - Continue to facilitate interoperability through common software implementations (e.g. software reuse)
- Refocus legacy requirements
 - Eliminate requirement for COTS re-packaging
 - Eliminate requirement for GOTS installer
 - Reduce need for government management of COTS/GOTS software repositories
 - Maintain architectural compatibility



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GUIDING PRINCIPLES

- Protect legacy mission application investment
- Maintain peaceful coexistence and software reuse as fundamental NCES objectives
- Focus on joint warfighter needs
- Users should be able to find and access the information they need
- Make enterprise infrastructure services small in number, well-defined, and stable
- Ensure that NCES services are implementable and secure



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GUIDING PRINCIPLES (CONCLUDED)

- Consider that incremental upgrades/evolution will be the norm
- Support the needs of program managers and developers
- Design and develop NCES software using a community process
- Data interoperability between current COE- and NCES-based systems



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NCES WILL PROVIDE...

- **Enterprise Infrastructure**
 - **Ubiquitous services across enterprise, network-accessible, independent of domain**
- **C2 Enterprise Services**
 - **Applicable across C2 COIs, network-accessible, nodes can produce and promote**
- **Reusable Software**
 - **Common software components, focused on C2 COIs, promotes interoperability and cost savings**
- **Build-Time Services and Software**
 - **Used by developers, doesn't need to be available at run-time, promotes integration and interoperability**



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DEFINITIONS

- Capability - functionality provided to the warfighter
 - Expressed in warfighter terms, not in technical nor in system terms
- Service - software and data required to support capabilities
 - One capability may require many services
 - One service may support many capabilities
- System - a specific collection of capabilities as currently fielded
 - All systems are legacy
- Warfighter-centric, network enabled
 - “Network-centric” places the emphasis in the wrong place (on the technology)
 - Warfighter is central, not a system, technology, or even

Field capabilities, not systems

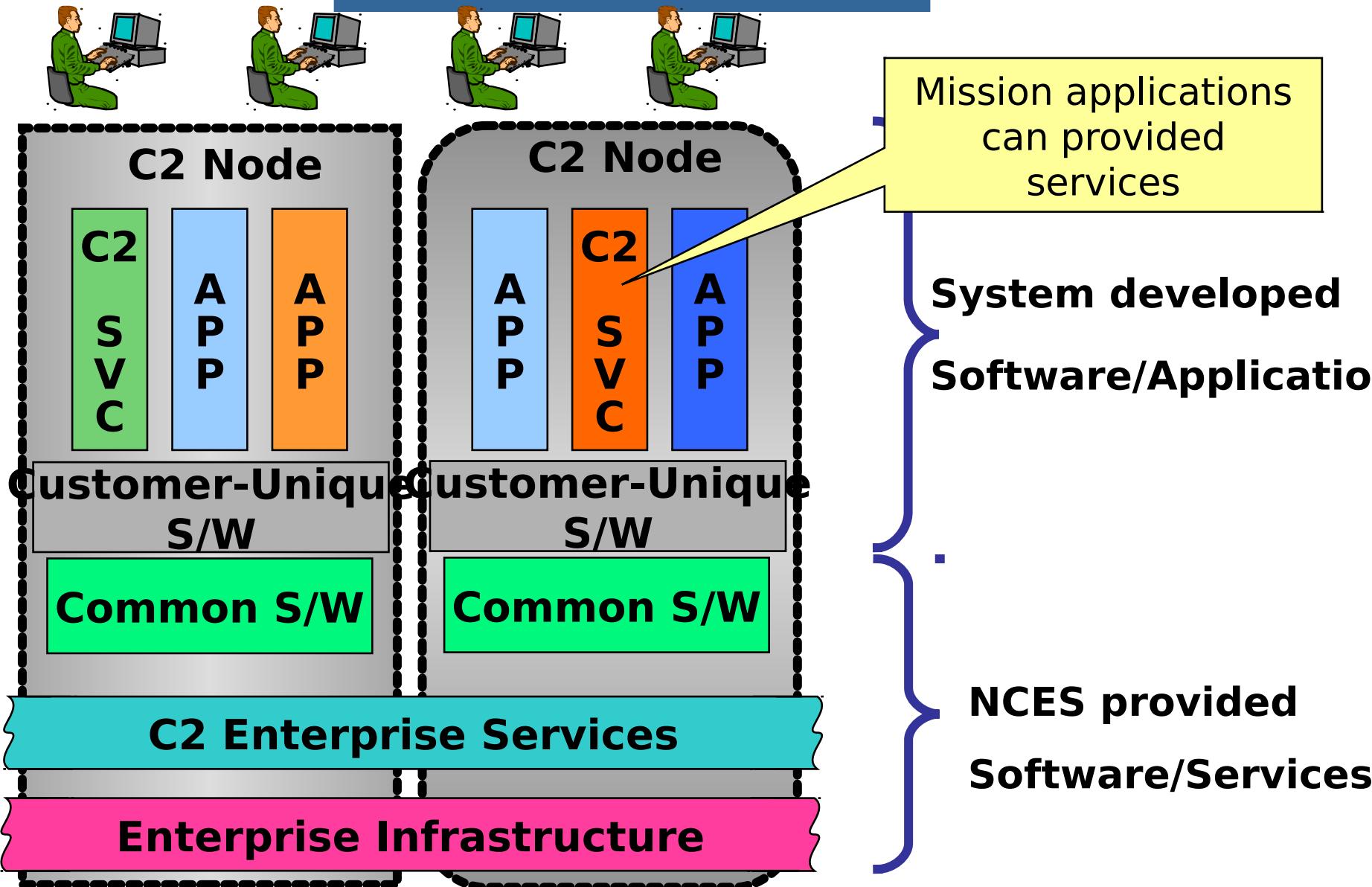


NCES DECOMPOSITION

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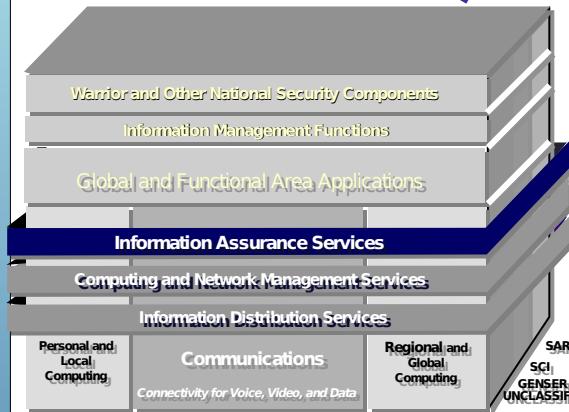
KEY ELEMENTS OF NCES

- Network-Centric Enterprise Services
 - Network Services that Meet C2 QoS Requirements
 - Enterprise Security to Protect the Enterprise
 - C2 Specific Enterprise Services
 - Lookup (Brokering) of Information & Providers
 - Transport for Robust Sharing Information
- Information Publishers (Producers)
 - Post raw and processed information
 - Provide value-added enterprise services
 - › E.g., Filtering, Fusion, Correlation, Analysis
- Information Subscribers (Consumers)
 - Access to Information Throughout the Enterprise using tools within the Infrastructure
 - No special client-side (edge user) requirements



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GIG Architecture



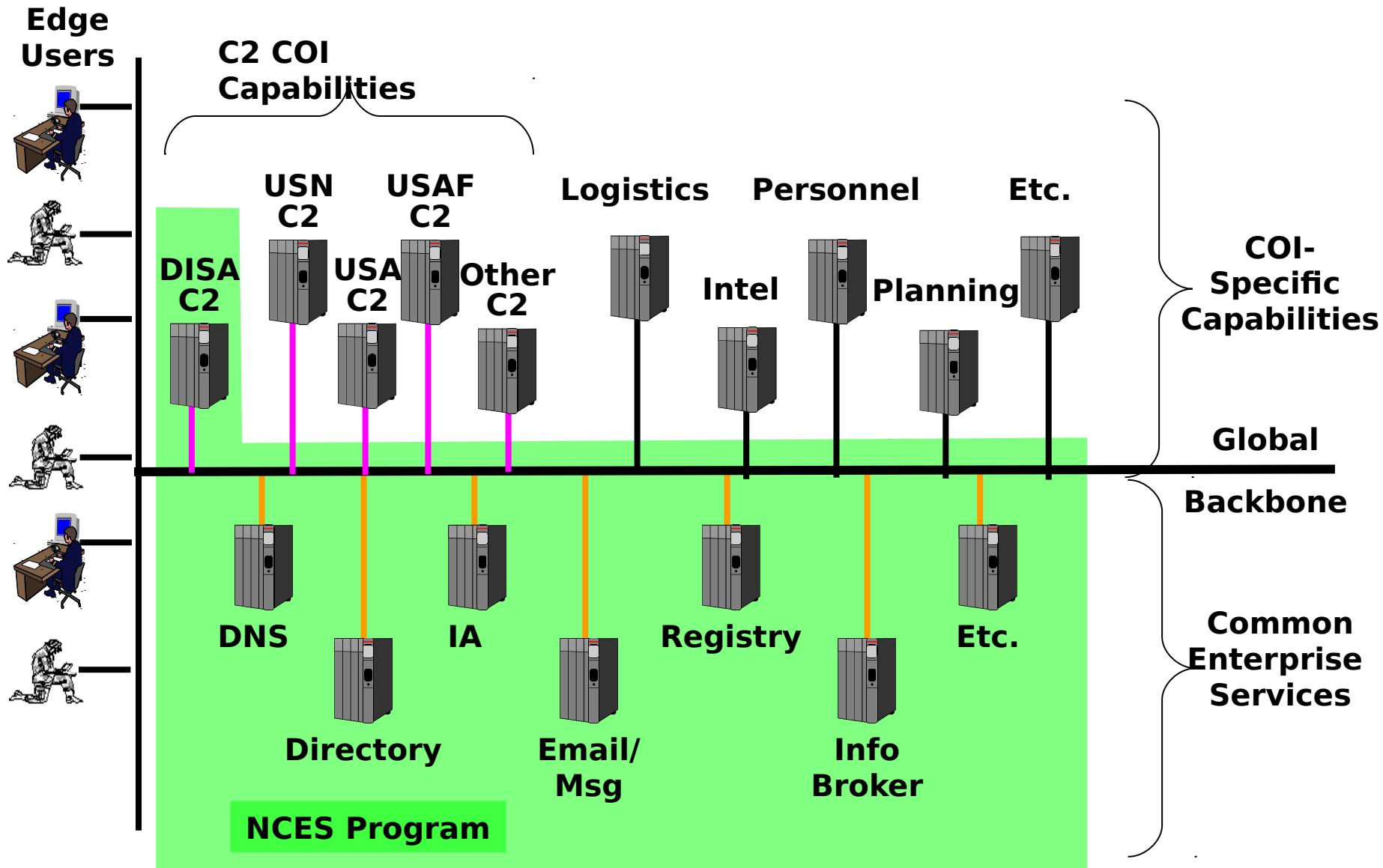
NCES SERVICES

COMMUNICATIONS
Communications Transport <ul style="list-style-type: none">- e.g., VPN
Network Management Services <ul style="list-style-type: none">- e.g., IP sharing, IP domains
Voice
Voice over IP
INFORMATION ASSURANCE
Identify Management <ul style="list-style-type: none">- e.g., Authentication
Key Management Infrastructure <ul style="list-style-type: none">- e.g., Distribution, Control of keys
Discretionary Access Control
Auditing
Encryption
INFORMATION DISTRIBUTION
Transport Mechanisms <ul style="list-style-type: none">- e.g., Messaging
Content Mechanisms <ul style="list-style-type: none">- e.g., Publish/Subscribe, Collaboration
COMPUTING & NETWORK MGMT
Health & Performance <ul style="list-style-type: none">- e.g., Service status, Metrics
Mgmt of Local Comm Network <ul style="list-style-type: none">- e.g., Bandwidth mgmt, DNS
Network Time <ul style="list-style-type: none">- e.g., Network Time Protocol
INFORMATION MGMT FUNCTIONS
Archival Services
Geographic Information Services
Information Modeling <ul style="list-style-type: none">- e.g., Mediation, Interdomain translation
Registry Services
Discovery Services
Common Operational Picture
PLATFORM APPLICATIONS
Quality of Service
Security Configuration Templates
Client Software



ARCHITECTURE VISION - CUT TO THE CHASE

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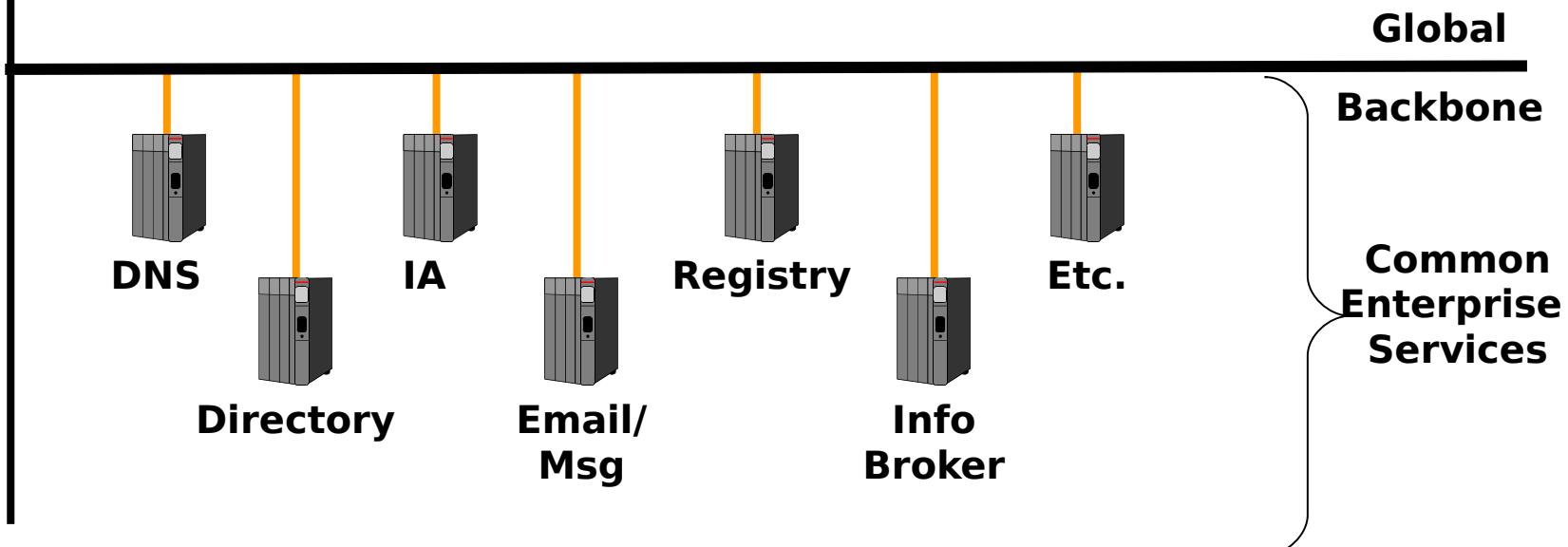
NCES ARCHITECTURE: COMMON ENTERPRISE SERVICES

Purpose

- Establish Connectivity
- Establish a Secure Environment
 - Defense-in-Depth
- Establish a producer/consumer marketplaceReplicated pattern to lower level sub
 - make what I have available
 - find what I want, and just what I want

Attributes

- IP Addressable
- Domain Independent
- Mostly COTS





NCES ARCHITECTURE: COE-SPECIFIC CAPABILITIES (C2 EXAMPLE)

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Edge Users



Purpose

- Commonly used COI Capabilities and data

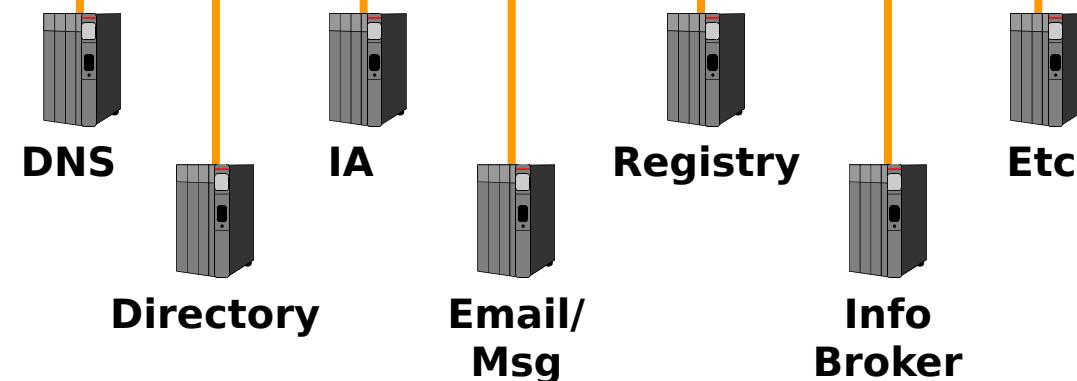
Attributes

- Built on top of CES
- Data & Business Logic only
 - no visualization
- 1 to N providers
- I/F to CES is what is important
 - notion of CES compliance is required

Global

Backbone

Common Enterprise Services



Note that this is also a migration strategy!



NCES ARCHITECTURE: PLATFORM ARCHITECTURE

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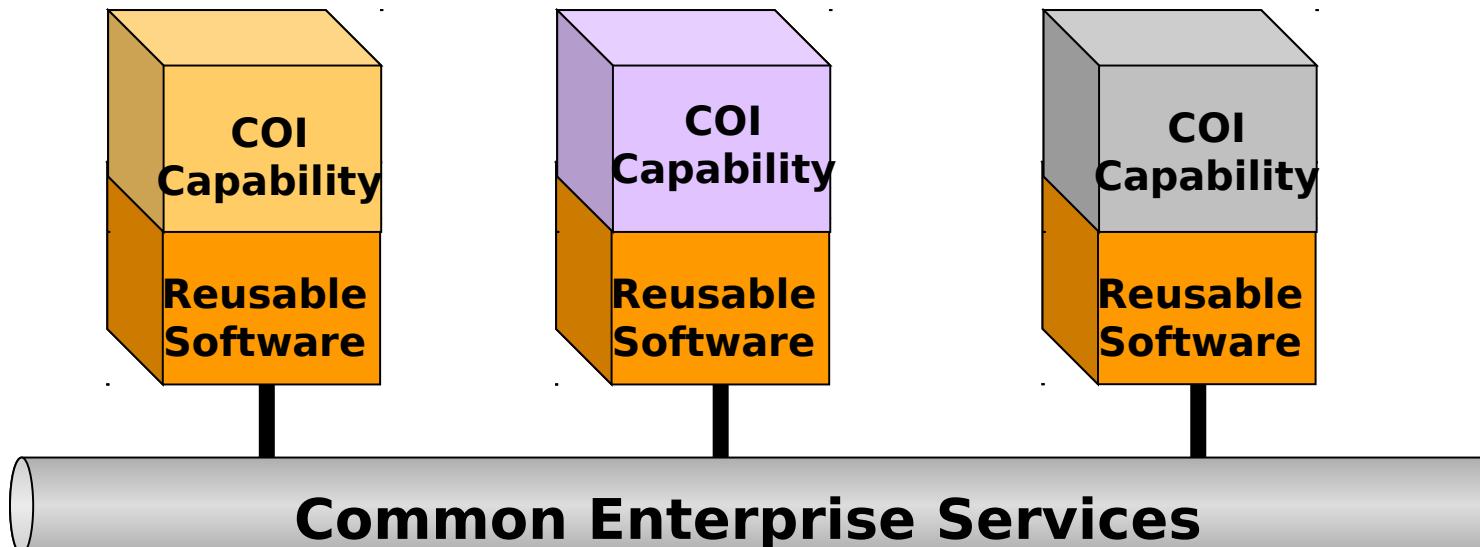
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Purpose

- S/W Reuse
- Facilitate Interoperability
- Promote Application Sharing
- Runtime Integration

Attributes

- Needed for “non-stovepipe” capabilities
- Solves “80%” of integration problems
- Platform level “Plug ‘n Play”
- No repackaging of COTS products





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DISA PRODUCTS & SERVICES

Technical Architecture

- Network Standards
- Security Standards
- Run-Time Standards (J2EE / .NET)
- Web-Services Standards (WSDL, SOAP, UDDI)
- Joint C2 Data Standards

Service Provider

- WAN Networks
- Network Services
- Enterprise Support Services
- Joint C2 Services
- Joint C2 Platforms (service hosting)
- Electronic Commerce Services

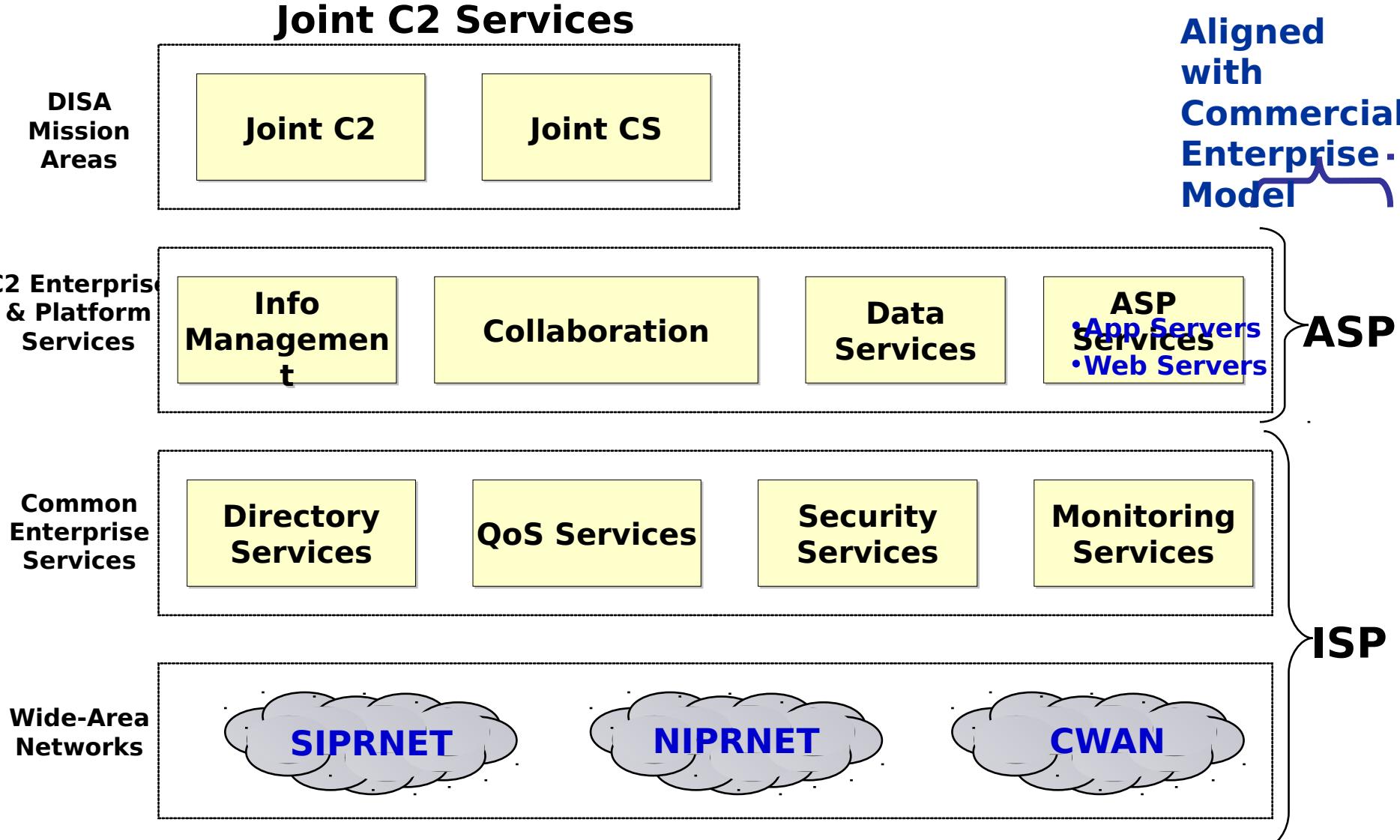


DISA PROVIDED SERVICES (EXAMPLE)

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ENTERPRISE DEPLOYMENT ARCHITECTURE

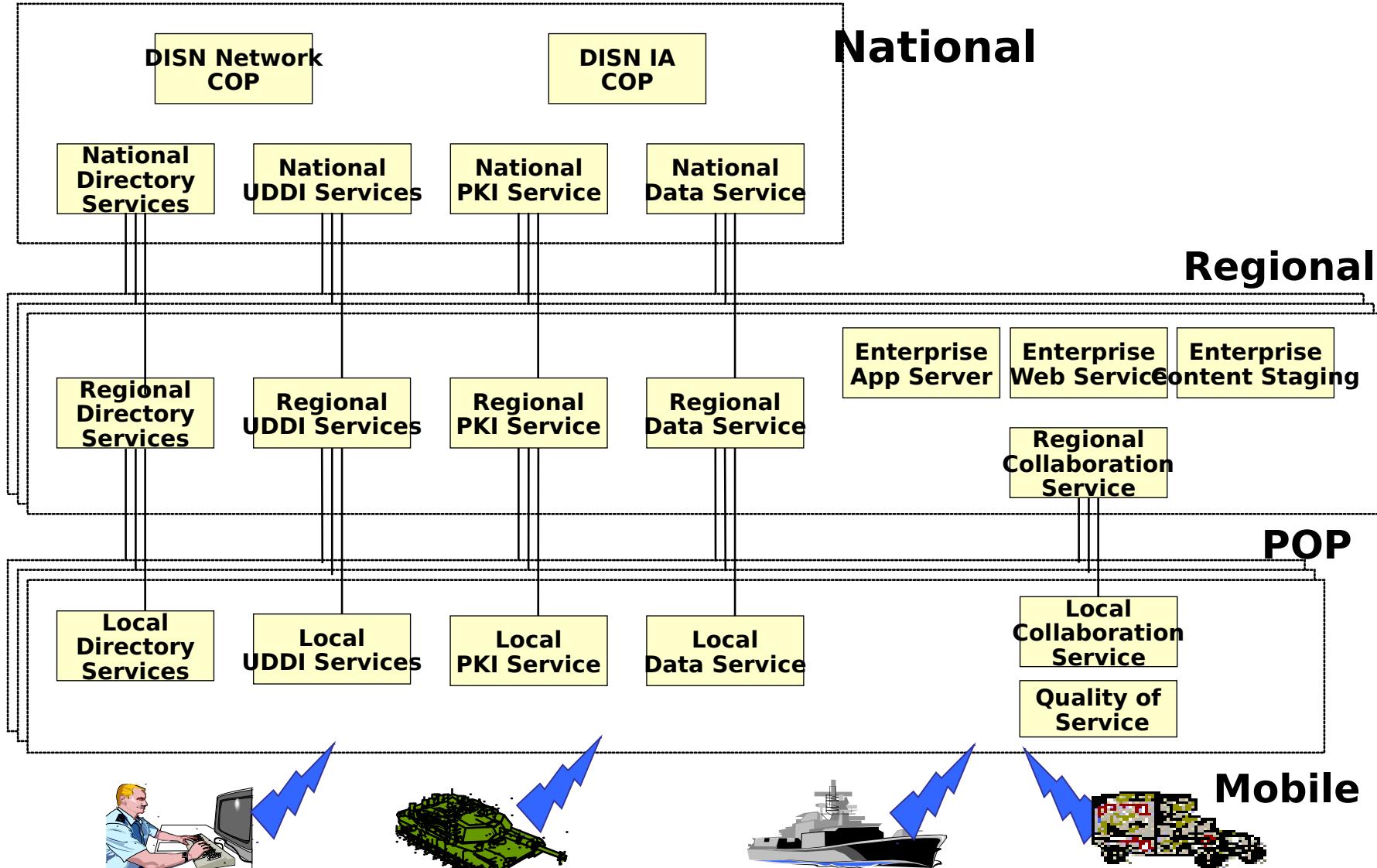
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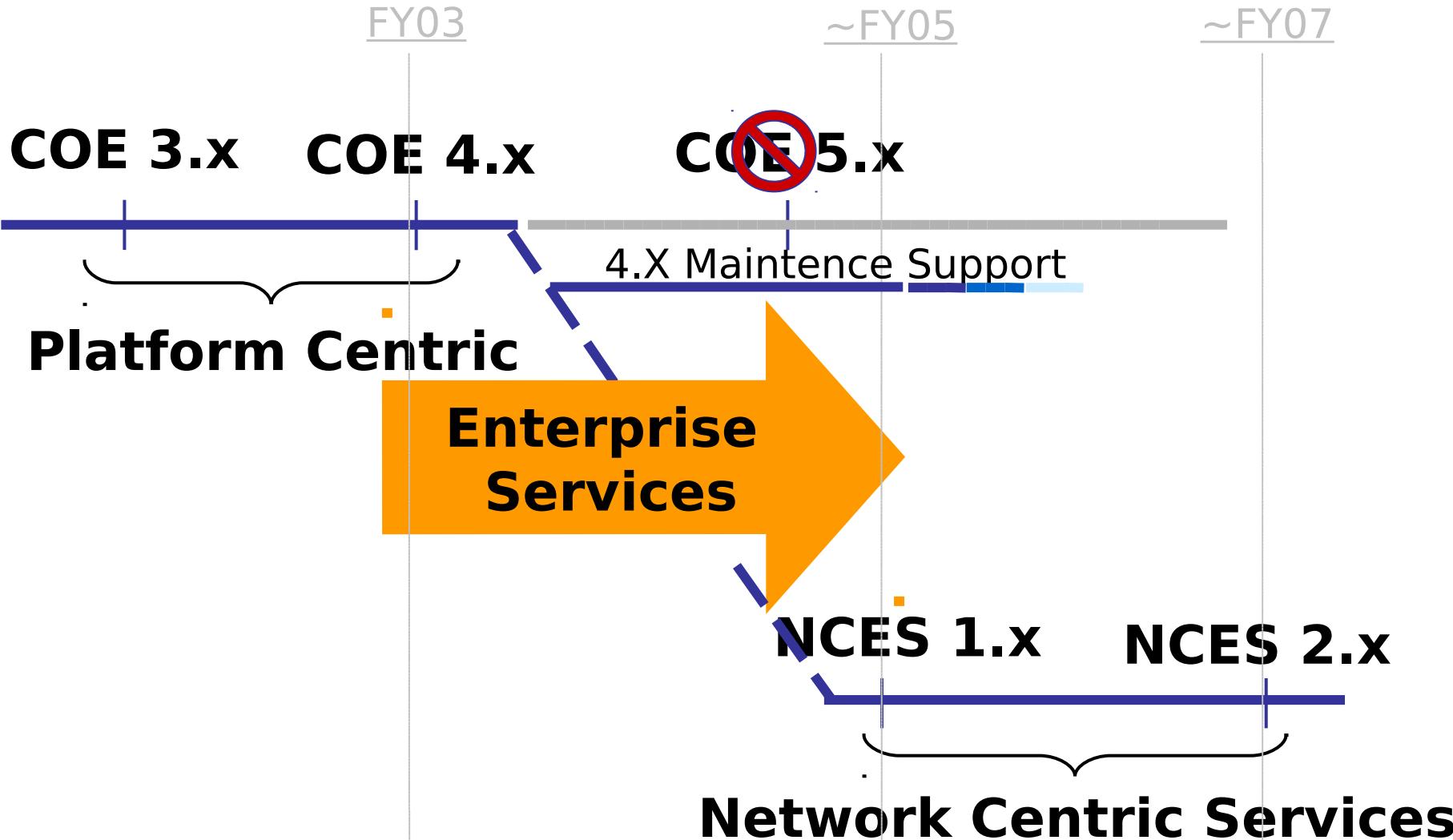


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NEXT STEPS/ACTIONS

- **Decompose legacy systems into capabilities or candidate C2 enterprise services**
 - i.e., ATO, JOPES, TPFDD, MIDB, NIMA data, Imagery, Situational Awareness data, METOC, etc.
- **Timeline and populate the CES based on services needed from #1**
- **Define I/F between capability and CES**
- **Define compliance criteria**
 - NCES compliance
 - Security compliance
 - Platform compliance (as required)
- **Certification & Accreditation Process for services vice systems**



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SUMMAR Y

- NCES Empowers the Warfighter Through Information Availability Across the Enterprise
 - Leverage Technology to Rapidly Expand Warfighters' Knowledge Base through Ubiquitous Information Availability
 - Provide Enterprise Services That Support Rapidly Evolving Operational Scenario
- Revolution with Evolution Ensures Rapid Transition While Protecting Current Investments
 - Revolutionary Approach Provides Early Enterprise Information Availability
 - Evolutionary Approach Ensures Ever-Increasing Capabilities With a seamless migration from COE to NCES
- Enterprise Infrastructure Establishes the Foundation
 - Built on the Global Information Grid
 - Provides the Quality of Service Demanded by Fixed, Deployable, and Mobile Warfighters Worldwide Operating in Both Connected and Disconnected Modes
 - Hierarchical Architecture ensures Operations Gracefully Degrade When Connectivity Impacts Occur